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12/13/01 01:13 PM

To: Megan Williams/P2/R8/USEPA/US@EPA
cc: "Weber, Steve F." <sweber@state.nd.us>
Subject: 1978 Emission Data

Megan:

Attached is an Excel spreadsheet with the emissions inventory data for 1978 for the power plants in North Dakota. The calculated emission rate for all sources except Minnkota Unit 2 is based on the AP-42 emission factor [30(s)], the coal usage and the average sulfur content. Minnkota Unit 2 has a scrubber for SO2. The "reported" emission rate is based on 66.7% removal efficiency. Minnkota's scrubber has never achieved that high of efficiency. In fact, during the late 1970's and early 1980's it worked so poorly we took enforcement action. The best estimate I can make of their 1978 emissions would be the allowable emission rate (1.2 lb/mmbtu) times the heat input for the year. The average heat value of the coal was 6427 btu/lb. Therefore:

E(SO2) = (1.2 lb/mmbtu) x (1956191 tons of coal) x (6427 btu/lb) / (1000000) btu/mmbtu
= 15087 tons

If you need anything else, let me know.

✓ $15087\ TPY = \frac{1.2\ lb_{SO_2}}{mmBtu} \left| \frac{6427\ Btu}{lb_{COAL}} \right| \frac{mmBtu}{10^6\ Btu} \left| \frac{2000\ lb_{COAL}}{ton_{COAL}} \right| \frac{1956191\ ton_{COAL}}{YR} \left| \frac{ton_{SO_2}}{2000\ lb_{SO_2}} \right.$

Tom

<<1978AEIR.xls>> 1978AEIR.xls

MINNKOTA UNIT 2 -

1977 - 9 mo. COAL USE DATA / AVG. HEAT INPUT

$\frac{1.2\ lb_{SO_2}}{mmBtu} \left| \frac{6478\ Btu}{lb_{COAL}} \right| \frac{mmBtu}{10^6\ Btu} \left| \frac{2000\ lb_{COAL}}{ton_{COAL}} \right| \frac{873814\ ton_{COAL}}{9\ mo} \left| \frac{12\ mo.}{YR} \right| \frac{ton_{SO_2}}{2000\ lb_{SO_2}}$

= 9057 TPY

1978 - BASED ON AVG. HEAT INPUT / 12 mo. OF COAL USE DATA

15087 TPY

NORTH DAKOTA

POWER PLANT

SO2 EMISSIONS

1978

COMPANY	PLANT	COAL USAGE (TONS)	MAXIMUM COAL FEED RATE (TONS/HR)	MINIMUM SULFUR CONTENT OF COAL (%)	AVERAGE SULFUR CONTENT OF COAL (%)	MAXIMUM SULFUR CONTENT OF COAL (%)	MAXIMUM 1-HR EMISSION RATE (LB/HR)	ANNUAL EMISSIONS CALCULATED (TONS)*	ANNUAL EMISSIONS REPORTED (TONS)
BASIN ELECTRIC POWER COOP.	AVS 1	0							
BASIN ELECTRIC POWER COOP.	AVS 2	0							
BASIN ELECTRIC POWER COOP.	LELAND OLDS 1	1361538	200 00	0 27	0 74	1 26	7560	15113 0829 ✓	14325
BASIN ELECTRIC POWER COOP.	LELAND OLDS 2	2435160	388	0 27	0 74	1 26	14666 4	27030 278 ✓	25425
MINNKOTA POWER COOP.	M R YOUNG 1	1427485	268 1	0 43	0 85	0 81	6514 83	13917 97875 ✓	18529
MINNKOTA POWER COOP.	M R YOUNG 2	1856191	298 4	0 43	0 85	0 81		15087**	8337
OTTERTAIL POWER CO.	COYOTE	0							
MONTANA DAKOTA UTILITIES	HESKETT 1	181755	30	0 5	0 71	0 97	873	1722 69075 ✓	
MONTANA DAKOTA UTILITIES	HESKETT 2	342560	57 2	0 5	0 71	0 97	1664 52	3648 284 ✓	
GREAT RIVER ENERGY	STANTON 1	577004	135	0 39	0 81	0 9	3645	5279 5866 ✓	7038
GREAT RIVER ENERGY	STANTON 10	0							
GREAT RIVER ENERGY	COAL CREEK 1	0							
GREAT RIVER ENERGY	COAL CREEK 2	0							
BASIN ELECTRIC POWER COOP.	NEAL STATION 1	128200	21 1	0 13	0 32	0 98	820 34	615 38 ✓	718
BASIN ELECTRIC POWER COOP.	NEAL STATION 2	128200	21 1	0 13	0 32	0 98	820 34	615 38 ✓	718
MONTANA DAKOTA UTILITIES	BEULAH PLANT	ND	ND	ND	ND	ND			

ND = NO DATA

* CALCULATED FROM AP 42 EMISSION FACTOR (30(S)) AMOUNT OF COAL BURNED AND THE AVERAGE SULFUR CONTENT

** BASED ON THE ALLOWABLE EMISSION RATE (1 2 LB/MMBTU) AND THE TOTAL HEAT INPUT FOR THE YEAR